

# Integrated Water Quality and Aquatic Communities Protocol – Lakes and Ponds

## Appendix L: Equipment List

Draft Version 1.0

### Revision History Log:

Previous Version	Revision Date	Author	Changes Made	Reason for Change	New Version

This appendix contains the full list of equipment needed for implementing the protocol.

### **General:**

- Large internal frame backpack
- Clipboard
- Data Sheets (Habitat, fish)
- Trimble GPS
  - Trimble unit
  - Data/charge Cradle
  - Charger
  - Stylus
  - Nylon fabric case
  - Computer cable
  - External antennae
- Garmin GPS (with nylon case)
- Spare batteries
  - Camera
  - Garmin
  - Headlamps
- Pencils
- Inflatable Boat (2 person)
  - Paddles (2 with handles)
  - Foot pump
  - Patch kit

- Duct tape
  - Sand paper
  - Vulcanizing agent
  - Patch material
  - Seamgrip glue (or similar)
- Life jacket (with charged inflator) per person (self-inflating suspender type)
- Anchor bag with rope
- Digital camera with high capacity SD card
- Wildlife identification guides (Amphibians and Fish)
- Beaufort wind scale guide
- Field Radio (Icom F70DT)
  - Carrying case
  - Battery charger
- Label Maker with spare labels
- Laptop for data backup
  - Carrying case
  - Charger
  - Computer mouse
  - other peripherals

### ***Water Chemistry:***

- Hach Alkalinity Kit
  - 100 mL graduated cylinder
  - 250 mL Erlenmeyer flask
  - Digital titrator
  - Stirring/application tubes
  - 0.16N Sulfuric Acid Cartridge (1, at least 1/4 full)
  - 1.6N Sulfuric Acid Cartridge (1, at least 1/4 full)
  - Bromcresol Green - Methyl Red Indicator Powder Pillows (2)
  - Phenolphthalein Indicator Powder Pillows (2)
  - Manual/Instructions
- Alkalinity Waste Vial (Amber 1L Nalgene)
- Secchi Disk (20cm diameter) with 25 m cord, marked every 0.5 m
- Van Dorn Style water sampler (Horizontal style, beta bottle, minimum 1 L volume)
  - Messenger on 25 m cord, marked every 0.5 m
- 250 mL Amber Nalgene Sample vials (2, Acid washed [SOP #1])
- 2L Amber Nalgene Collection bottles (2, labeled "Shallow" and "Deep")
- 60 mL Amber Boston Round vials with tinfoil lids (2, Acid washed and combusted [SOP #1])
- 20 mL High Density Polyethylene vials (2)
- 0.45  $\mu$ m nylon membrane filters, 47mm diameter (4)
- 0.7  $\mu$ m Glass Fiber Filters, 47 mm diameter (Whatman GF/F) (2, Pre-combusted and stored as in SOP #1)
- Flat-tipped forceps

- Polysulfone In-Line Filter Holder (47 to 50 mm diameter) (1)
  - Luer fitting
  - Fitting O-ring
  - Upper Bell housing
  - Support plate
  - Body O-ring
  - Lower support Plate
  - Lower Bell Housing
  - Output fitting
  - Output fitting O-ring
- Luer-lok syringe (60 mL)
- Organizing Bags (nylon mesh, plastic ziploc, etc)
- Field Towel
- Latex gloves, Protective eyewear
- Pre-Printed Labels (as specified in SOP #9)
- Aluminum foil
- Water Probe
  - Manta water probe
  - Storage cup for Manta
  - Weighted cup for Manta
  - Amphibian data logger
  - Spare battery for Amphibian
  - Storage bag for Amphibian
  - Calibration kit for Manta
    - ◆ Calibration cup
    - ◆ pH buffers (4.0, 7.0, 10.0)
    - ◆ Conductivity standard (0.100 ms/cm)
    - ◆ ORP Standard (0.200 mV)
    - ◆ Turbidity Standard

### ***Zooplankton collection:***

- Zooplankton net (Wisconsin style, 153  $\mu$ m mesh, 5 inch diameter opening)
  - Rope/cord (25 m long, marked in 1 m increments)
  - Dolphin attachment (with surgical hose and hose clamp)
- Collection cup (250 mL Amber Nalgene vial)
- 500 mL squirt bottle
- 95% Ethanol
- Alka-seltzer tablets
- 50 mL sample vial (large plastic centrifuge vial)

### ***Fish Collection:***

- Gill net
- Bucket

- Small mesh bag
- 250 mL Nalgene vial
- Fish board
- Pesola scales (600 g and 1 kg)
- Ziploc baggies
- Latex gloves
- Lightweight monofilament fishing line (small spool)
- Fish data sheets

***Invertebrate collection:***

- D-frame net (500 µm mesh, 0.30 m wide)
- 500 µm seine
- Sample vials, prefilled with 95% Ethanol (large capacity [500 mL or more] at least 4)
- Metal splitter
- Interior paper labels
- Exterior labels (see SOP #9)
- Collapsible buckets (2)
- Soft-touch forceps

***Personal equipment (responsibility of crew to provide for themselves):***

- Rain gear
- Hiking footwear
- Sunhat
- Drinking water containers (Bottle or bladder style, 2 L capacity minimum)
- Spare set of dry clothes

***Personal equipment supplied by NPS:***

- Neoprene booties
- Waders
- Neoprene gloves
- Drinking water filter
- Headlamps